

Forensic Examination of Occupational Marks in Fingerprint and Palm Print of Electrician and Mechanic Workers

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Abstract

The aim of the research project is to study of the fingerprint and palm print of the individual with different occupation and to evaluate that which types of occupational marks and other types of marks differ with the education and profession on their hands. Fingerprint and palm print is the one of the most reliable means of distinguishing one person from another it is the unique property of complete individuality. Fingerprint and palm print damage made to hard recognize the suspect in forensic investigation for legal proceedings because of the sometime damage fingerprint occurs by accident or attained during their line of work which will be dependent upon the work people do. This research work gives a truly unique perspective of relation of fingerprint and profession. The study defines the different types of occupation marks in fingerprint and palm print such as thickness, scars, hardness and other marks observed among the mechanics and electrician workers which is very useful where is the identification is not feasible.

Keywords: Fingerprint; palm print; occupational marks; Identification

INTRODUCTION

Occupational marks play a significant role in forensic science identification and it is used as an evidence for personal identification .These are helpful in identifying unknown dead bodies in mass disaster , plane crashes , earthquake , fire explosions in any situation where visual identification is not possible so that it is identify with the help of various techniques such as fingerprinting , DNA profiling , anthropometric measurements , forensic radiology etc.[1] Moreover, occupational marks are produced on the skin of a person in response to any type of occupation and these marks are attained during their line of work which will be dependent on the work people do.[2]

Occupational marks developed on any part of the body depending upon the type of occupation like in teeth , bone , hands , feet , toes etc. But this marks mainly seen in manual workers highly amount of scars , abrasion , callosity ,thickness mainly seen in the manual workers as compared to non- manual workers .For instance , clerks hands mainly callosity find out on distal portion of the fingers .In case of optician small cuts find out on the tip of the fingers. In case tailors ,electricians , carpenters ,mechanics in their hand some occupational marks are find out such as hardness , cuts , line disappear etc.[3] If we talk about tailor teeth in which also seen occupation marks in the form of abrasion because of continuously using of

thread for cutting while stitching . whereas , pulling of wire by electrician's teeth can also seen[4].These marks are very helpful in narrow down the search of identification by comparing the ante- mortem and post- mortem records. Each and every person has unique

marks present on their body and in which scars are the most prevalent of occupational marks , tattoo marks and body deformity .There is a strong association between sex , age of presence of tattoo and occupational marks based on the educational status , occupation and religion of a person .[5]

Friction ridges distinguish as provisional or permanent . This ridge refers to the skin of the palmer area of the hands and fingers it is also seen on the feet and toes . In case of small injury such as paper cut in which only effect the epidermis layer without discolor .However , permanent disruption in the fingerprint will result which interrupt to the formation of scar which will be as permanent .[6]

CASE STUDIES

A case was solved with the help of the occupational marks .Identified the unknown dead body used the many techniques and also include the occupational marks examined over the body which marks are attained during their line of work .concluded that solved a case identified the occupational marks of an unknown body which was male who committed the suicide .[7]

Studied that various types occupational marks which can vary from one to another or it can be same in some occupation also. This condition was known as hyperpigmentation and lichenified, with linear striations .This effect vary with various factors such as age, sex, humidity ,sweating nutritional status, infection ,genetic and racial factor .studied 40 year old man whose profession was coconut tree climbing from last 20 years shows the hyperpigmentation and thickening of skin occur on bilateral forearm for climb up on the tree which usually take 4-5 minutes for pluck the coconut and 30 seconds to came back down from the tree . observed that palms and soled yellowish callosities with loss of Dermatoglyphics markings were shown .[8]

Sydney shark case :--This case solved by the identification of the tattoo mark . A man name was James smith vanished on 8th April and never seen again .After days a fish was sold at a beech and after 3 days it vomited out of quantity of material including a arm. After investigation the arm belongs to an adult man .Smith wife identify the tattoo marks and she said that that arm belong to the smith and fingerprint expert were able to support the identification .[9]

MATERIALS AND METHODS

- • Ink pad
- • A 4 sheet
- • Magnifying lens
- • Highlighting markers
- • Pen

Sample collection

The subject comprised mechanic and electrician workers .The data was collected from 20 samples from mechanics and 21 samples from electrician workers .This samples were collected from Kapurthala before taking prints instructed to the subjects not to put pressure on the paper during the print time as is result blurring of the prints leading to the unidentified

marks .After brief description the subjects hands were washed and cleaned with the tissue paper to collect the 10 digit rolled fingerprint and palm print .After that each fingerprints was taken in the particular column starting from thumb ,index middle ,ring and little for the both hand fingers and also taken the palm print .

ANALYSIS

After collected to the all prints were recorded and analyzed with the help of magnifying lens and also observed the individual characteristics different types of occupational marks were :- scars , blisters , callosity , hardness , creases were noted down according to the work of experience and age .

RESULT AND DISCUSSION

After examination it was observed that Table 1& 2 showed a total 20 samples of fingerprint and palm print were collected from mechanics workers .After analyzed these samples that most 95% of the workers had hardness on the inter digital pads on both hands and highly amount of creases ,lines disappear and blister formation observed on their both hands who have experience of more than 5 years .On the other hand , 35% blister formation and scars were observed who have experience of less than 5 years.20% cuts , callosity were not observed in some workers who have experience under 2 years.

Table 3 & 4 A total of 21 samples of fingerprint and palm print were collected from Electrician workers in which observed that cuts, blisters and callosity were observed on the Index ,Thumb, middle fingers on the right hand who had experience 5 to 6 years with continuous hold the screw drives. Less thickness and scars were observed who had experience below 3 years . In which mainly effect on the index ,middle, thumb of the fingers .

Table no 1 :- observation seen in mechanic workers work from 1-5 years of age group of 20-40 years.

Sr.no	age	Year of work	observation
1	32	5	Hardness on the inter digital pads on the both hand with the continuous using hammer and also seen line disappear .
2	27	2	Less hardness , less cuts seen on the fingers .
3	25	1	Less amount of marks seen on the both hands.
4	30	3	Highly amount of scars are seen on the left hand , line

			disappears on the right hand on the palmer area .
5	37	2	Minimum amount of creases are seen on the both hands, small cuts are seen on left hand tip of the fingers.
6	25	3	Less hardness and creases seen on both hands, less cuts are seen on the fingers.
7	40	5	Highly hardness on the inter digital pads , blister formation on the hands.
8	32	5	Larger cuts are seen on the hands, thinner side on the left hand are more effective.
9	38	5	Highly amount of blisters, hardness, line disappear ,cuts on the fingers on the both hands.
10	32	5	Central area more effective on the both hands , blister formation on the fingers
11	38	5	Blister formation on the fingers , lines disappear on the both hands.
12	25	2	Less creases, hardness and small cuts on the fingers.

Table no 2:- observation seen in mechanic workers work from 6-10 years of age group of 20-40 years.

Sr. no	Age	Year of work	observation
1	35	6	Maximum amount of seen line disappear, creases on both hands, larger amount of scars seen on the fingers.
2	40	10	Highly effective seen on the both hands with the scars , creases, blister formation and callosity.
3	39	7	Central area more affective with the hardness on the right hand ,creases ,blisters are also seen on both hands.
4	40	10	Lines disappear on the central of area on the both hands ,highly cuts on the fingers .
5	35	8	Thickness ,creases ,blisters on the both hands.
6	35	10	Maximum amount of creases, blisters formation on the palmer area .
7	38	7	Line disappear ,hardness ,scars on the both hands.
8	40	8	Highly amount of creases, thickness on the central part of the hands,blisters formation on the fingers.

Table no 3:- observation seen in the electricians workers work from 1-5 years of age group of 20-40 years .

Sr.no	age	Year of work	observation
1	30	5	Callosity on the index ,middle ,and thumb fingers in right hand with continuous hold the screw drives.
2	40	5	Blister formation are seen on the right hand on three fingers ,small cuts on the left hand .
3	27	4	Small cuts on the left hand on the fingers ,less callosity seen on the right hand .
4	30	3	Maximum amount of creases on the both hands ,small cuts seen on tip of the fingers .
5	33	4	Thickness and callosity on the right hand .
6	28	5	Callosity on the right hand on palm area ,cuts on the both hand on the tip of the fingers.
7	30	5	Blisters formation on the both hands on the tip of the fingers, creases are seen on the right hand .
8	25	2	Less callosity ,only effect seen on the right hand.
9	30	5	Highly amount of crease on the right hand , larger size cuts on the left hand tip of

			the fingers .
10	27	3	Less blister formation ,scars , thickness on the right hand .
11	32	5	Maximum amount of blisters and cuts on the left hand.
12	28	4	Line disappear and cuts on the fingers .
13	28	2	Less callosity on the right hand only creases seen on the right hand .
14	27	2	Less callosity seen , small cuts on the index finger on the left hand .
15	32	4	Blisters on the right hand ,cuts on the tip of the fingers .
16	25	3	Less thickness ,less amount of cuts on the tip of the fingers .

Table no 4 :- observation seen in electricians workers work from 6-10 years of age group of 20 -40 years .

Sr.no	age	Year of work	observation
1	30	6	Maximum amount of callosity on tip of the fingers on the both hands ,blisters formation on the left hand .
2	40	6	Highly amount of creases and blisters on the right hand, scars seen on the index and thumb fingers.
3	35	7	Most of the cuts on the right hand fingers

			, lines disappear on the right hand .
4	35	7	Highly amount of cuts on the index finger on the left hand ,line disappear on the tip of the fingers.
5	30	6	High amount of blister on the index finger on the right hand larger size cuts seen on the left hand ,creases seen on the both hands .

CONCLUSION

From this study we can conclude that the fingerprint and palm print pattern of electricians and mechanics are different from each other on the basis of few parameters such as callosity ,scars ,lines disappearance ,hardness ,blisters ,cuts . Therefore , the hypothesis has been proved that different profession and use of hand brings some permanent changes to fingers and palm area . These marks will enhance the identification and recognition of the unspecified body .

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